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ABSTRACT

This paper describes and evaluates a gymnastic program for children (ages 4-9) with autism and related developmental disorders. An introductory section reviews the literature on characteristics of children with autism and discusses how traditional education is inadequate for such children. Review of the literature on effective interventions notes the importance of a structured environment, behavior modification techniques, positive peer interaction, and play skills training. The 45-minute weekly program served 12 children with various pervasive developmental disorders. The structured program utilized a high staff-student ratio and included both group activities as well as individual skill development on various apparatus. A survey of parents at the 7th and 11th weeks indicated high levels of satisfaction with the program. Although measures of students' gross motor and listening skills did not reveal significant changes, a significantly higher percentage of students could perform motor skills independently at the end of the program. Parents also expressed a desire for more recreationally oriented programs. Appendices include the parental waiver form, the parent survey, and a program description. (Contains 22 references.) (DB)

Addressing the Needs of Children with Autism:
 An Evaluation of a Gymnastics Program
 for Children with Autism and Related Disorders

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Autism is a pervasive developmental disorder characterized by impairments in social interaction and communication (both verbal and non-verbal), coupled with a strict adherence to limited rituals and behaviors, and a strong resistance to change. Abnormal sensory perception is also common. Autism is usually diagnosed by the age of three on the basis of a marked impairment in social interaction, communication and make-believe or imaginative play.

Autism is also known as infantile autism, Kanner's syndrome or childhood autism (Gillberg, 1995; American Psychiatric Association [APA], 1994). As noted by Courchesne (1989), Sullivan (1994), Goble (1995), and Quill (1995), in 1943, Leo Kanner was the first person to document the presence of this disorder. Sullivan (1994) writes that Kanner chose the word

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autism for its Greek root, autos, meaning self, to represent the solitude exhibited by the children he observed.

Bernard Rimland presented the first evidence that autism has its roots in abnormal brain functioning twenty-one years after Kanner's 'discovery' of autism. He based his contention on the positive concordance rates he obtained from twin studies (Courchesne, 1989). Subsequent research has consistently supported the neurophysiological etiology of autism.

Those with autism present a wide range of deficits (from severely disabling to barely noticeable). The APA (1994), Sullivan (1994), and Gillberg (1995) characterize the deficit in social interaction as a failure to spontaneously seek out people and reciprocate social interaction. Individuals with autism do not usually seek out peers to express feelings or comments, although they may express needs when desperate. They generally appear to have a disinterest in or lack of awareness of others, even family members and other children, and of their needs and desires. Eye contact may be fleeting and superficial; these children often seem to be staring off into space or looking through the other person, rather than at them.

The autistic individual may catch another person's eye while scanning the environment, but usually does not use it as a means of gaining attention. This abnormal lack of social reciprocity may be the result of the unpredictability and unfamiliarity of strangers. Appreciating predictableness and familiarity, children with autism will often readily approach those to whom

they are accustomed, including family members, teachers, and therapists (Gillberg, et. al., 1985, Gillberg, 1992 and Hagerman, et. al., 1995 as cited in Gillberg, 1995). Their heightened need for sensory stimulation often yields a preference for an inappropriately high amount of bodily contact (Grandin, 1992).

As those with autism age, they do not typically develop the ability to understand other people's frames of mind. As children, they appear to have a disinterest in forming friendships, but by adolescence that disregard appears to subside. As they get older, these individuals are often unable to decipher the subtle social cues that govern social interaction. Their conversations are usually factual and straightforward, lacking the casual give-and-take of typical conversations (APA, 1994; Sullivan, 1994).

Many of those with autism also have difficulties expressing emotions; this is not because emotions are absent for them, but because they are perplexing. The notion that facial and unspoken signals can relay meaning is foreign to them, which hinders their social interactions. Jim Sinclair (1992), an adult living with autism, notes that those with autism may not relay emotions through face, words, or actions because they do not understand that there is usually a connection between having a feeling and expressing it. Emotions are very abstract, which makes it difficult for individuals with autism to grasp their meaning and importance.

The APA (1994) and Sullivan (1994) note that speech may be

present during the first few years of life of a child with autism, but then diminish. However, in those with autism there is often an absence of babbling as a baby, and onset of verbal and non-verbal communication may be delayed (APA, 1994). Rutter (1985 as cited in Gillberg, 1995) reports that almost half of those with autism never speak, and most engage in echolalia at some point in their life. When speech does develop, as remarked by Wing (1989 as cited in Gillberg, 1995), it too is characterized by a lack of reciprocity. Language is usually awkward, as if the individual with autism does not have access to all of the language areas available in the brain. Those with autism do not seem to utilize all components of communication, especially the paralinguistic codes (APA, 1994; Sullivan, 1994). Understanding of subtle conversation cues and how to sustain a conversation often is absent. Metaphorical language, and use of language only those close to the autistic can understand, is also common (APA, 1994).

Language deficits are so central to this disorder that Sullivan (1994) labels autism a disorder of expressive language. Although those with autism have receptive language (can point to an object upon command), they do not possess the innate ability to verbalize it (when asked what it is, they will answer incorrectly). Therefore, Gillberg (1995) writes that they have language, but do not grasp the concept of communication. Sinclair (1992) and Gillberg (1995) state that the impairment or absence of language is due to an inability to understand why

communication is necessary and how it functions, not an inability to speak.

A strict and rigid adherence to rituals characterizes most individuals with autism (Gillberg, 1995). The autistic individual's whole life seems governed by the drive to maintain sameness in behavioral patterns and routines (Sullivan, 1994). The person with autism may have an obsession with stereotypical patterns abnormal in intensity or focus, inflexible adherence to nonfunctional rituals or routines (i.e., repeatedly circling the yard every time allowed out to play), stereotypical body movements (i.e., hand flapping), or a persistent preoccupation with objects or parts of objects (APA, 1994; Sullivan, 1994; Gillberg, 1995). For example, a child may be so attached to a certain cartoon, that he/she may read only that cartoon's books, play with toys of the corresponding characters, constantly repeat phrases from the show, and ignore everyone and everything else. When that cartoon is removed, the child may react severely. Sullivan (1994) writes that a tiny change in a once stable environment, such as removing an armchair from a living room, can also result in a tantrum.

Sensory integration problems are also common, involving the inability to effectively organize sensory input with information learned (King, 1992). Mesibov and Shea (1996) argue that those with autism perceive their environments differently than those without the disorder. This deficit in sensory processing usually manifests itself in tantrums and misbehavior.

Tony Attwood (1993), an adult with autism, comments that he and other adults with autism attribute inappropriate and challenging behaviors to attempts to protect themselves from their hyper/hyposensitivity to sensory stimuli. Temple Grandin (1992; Attwood, 1993) recalls that while she was concentrating on a spinning plate, the world was silent and tolerable, but when engaged in the world around her, it was loud and unbearable. King (1992) notes this as well. She states that many autistics seek out calming sensations, such as rocking, hugging, or plate spinning, largely to escape and organize their world.

Many people report an inconsistency in sensory perception. A noise that was unbearably loud one day would be muffled and static-like the next. This sensory deficit can occur in all senses. Some colors are reported as being "painful" to look at, and the constant flickering of fluorescent lighting that most people cannot see can be perceived by an individual with autism and make it difficult for that individual to concentrate (Attwood, 1993). Temple Grandin (1992; Attwood, 1993) remembers that the transition from shorts to pants in the wintertime was painful. She was not used to the sensation of material on her legs at all times and did not know how to deal with it, so she screamed and threw tantrums.

It seems evident that individuals with autism are not necessarily unintelligent. Mesibov and Shea (1996) note a range in IQ scores of people with autism from profoundly retarded to extremely gifted. It is reported that approximately 75% of

autistics have an IQ below 70, but this may be due to their uneven development of cognitive skills and expressive language. They may speak, but not understand what they are saying (APA, 1994; Sullivan, 1994). Many individuals with autism are intelligent, but they do not know how to express their thoughts effectively.

Traditional Education is Inadequate for those with Autism

Basic life skills, such as eating, walking and discerning social cues, need to be taught slowly and thoroughly to the person with autism (Sinclair, 1992). It is the responsibility of the non-impaired population to help the less-abled population with the availability of a variety of sources to learn and improve and escape from their world of autism. Quill (1995) argues that children with autism "shouldn't waste their formative years, imprisoned in classrooms that don't interest them" (p. 66).

Traditional classrooms may not be optimal for those with autism. Schrag (1991 as cited in Quill, 1995) notes that in 1990, the Office of Special Education and Rehabilitation reported that 40% of special education teachers were conditionally certified. This means that they did not meet the minimum requirements of the state. Due to this undercertification, there is a high turnover rate in schools, forcing the children with autism to train and break-in about five teachers before they

graduate. The turnover rate itself, not to mention the underqualified teaching staff, can cause stress and problems for the autistic due to their constant need for an unchanging environment. Introducing five new teachers does not create a stable environment conducive to learning.

Effective Interventions

Research has shown that children with autism learn best in a structured environment, using techniques such as behavioral modification. This method utilizes the positive reinforcement and reward model that Helen Keller benefitted from (Rimland, 1998). Ivar Lovaas, Barry Neil Kauffman, and Glenn Doman also support use of one-on-one intensive home-based behavior modification therapy (Quill, 1995). Lovaas claims to have "cured" 50% of his patients through his behavior modification program (1987 as cited in Quill, 1995).

Occupational therapy has been used to foster sensory integration in children with autism. Understanding that impaired sensory perceptions manifest themselves in behaviors and resistance to learning, occupational therapy helps the child with autism to understand and tolerate different body movements and textures.

Development of social competency is fostered by positive peer interaction (Bruner, 1986, Casaro and Schwarz, 1991 as cited in Quill 1995). Play allows children to learn how to handle

conflicts and negotiations, sustain and form age-appropriate relationships, and interpret subtle social cues (Rubin, 1980, Dodge, Schmidt, Schocken, and Delugach, 1983, Parker and Gottman, 1989 as cited in Quill, 1995). This claim is supported by research advocating the importance of social and play skills groups, as well as peer mediated groups. Krantz, Patricia, McClannahan, and Lynn (1998) used social scripts to teach social interactions. The children practiced these scripts in the group, then put them to use in public when ready. All of the children successfully generalized the scripted interactions with teachers to random subjects. This allowed for improvements in social and communicative areas of development, for the children were able to converse and interact with adults and benefit from the conversation.

Pollard (1998) offers support for the implementation of play skills training groups to enhance the development of children with autism, but also believes that it is effective to have normally developing peers work with the children with autism. Gonzalez-Lopez and Kamps (1997) witnessed increased frequency of peer interaction with children with autism in the following study. They used a free-play time to allow the normally developing children and those with autism to interact. The non-autistic children were first-graders who were knowledgeable in the areas of autism and behavior management. This study supports the claim that peer interaction and behavior management are beneficial in the development of impaired social behaviors of

children with autism. Another study, done by Pierce and Schreibman (1997), proves that peer interaction with autistic children can help with the intervention and individualization of the autistic.

It appears that social and play skills groups are important in the life of every child with autism in order to augment learning. However, these groups are not currently abundant in America.

Needs Assessment of Families with Children with Autism

People with autism typically do not learn efficiently in the traditional manner, so early intervention, education, special skills development opportunities, understanding, and acceptance are imperative for their optimal development. A study by Leahy and Chambliss (2000) compared the system of autism support offered in South Australia with the services available in the U.S. To assess adequacy of current services, parents of children with autism were surveyed. All U.S. families surveyed reported that their children were receiving some occupational therapy and speech and language interventions, but none were receiving all the services they deemed important for their child. Most (85%) of those surveyed received the bulk of their funding from the school district. It should be noted that many times school funding is supplemented by government funding, so that the government pays 60% and the school district pays the remaining

40%. Only one respondent stated that they do not receive any type of funding at all. All but one survey voiced a need for a centralized autism agency and public reference library.

The fact that more than half of the services that the surveyed families did not currently receive were perceived as being important to their child's development is an obvious problem. Many of the children are not receiving social and play skills training or peer mediated academics and playing. The importance of these services has been convincingly established (Quill, 1995; Gonzalez-Lopez, 1997; Pierce and Schreibman, 1997; Krantz, Patricia, McClannahan, and Lynn, 1998; Pollard, 1998).

The evidence suggests that many of the services deemed important to the child's development by both professionals and parents are not currently being provided in the U.S. There are many reasons why the children may not be receiving them, but discussions with professionals and parents suggest that many of the services are either simply not currently available in the U.S. or are too expensive. Many agree that the schools should be offering additional services.

The Leahy and Chambliss (2000) results indicate that most parents feel that neither their child's nor their own needs are currently being adequately addressed. Comparison of this country's resources for those with autism with the services provided by other nations, such as Southern Australia, highlights the inadequacies of present U.S. system of care. It also provides ideas about how to expand services. The current study involved an

outcome evaluation of an innovative community gymnastics program for children with autism and related pervasive developmental disabilities. Participants met with trained volunteers for weekly gymnastics training sessions. Tasks were presented gradually; demands were individualized, in order to assure all students experienced frequent success. Social reinforcement was used abundantly to maintain students' enthusiasm and involvement in the program. This outcome evaluation was designed to assess the feasibility of offering such ancillary services to children with autism and related disorders.

Methods

Participants

A total of thirteen children participated in the program, eleven boys and two girls. Their ages ranged from four to nine years old, with a mean age of 7.3 years. The results reflect data on twelve of the thirteen children. The thirteenth child was ADHD diagnosed and therefore data regarding him was not included in the analyses. The twelve children had previously been diagnosed with a pervasive developmental disorder. The sample included two children with Asperger's syndrome, four children with PDD-NOS, four children with autism, and two categorized as 'other'.

Apparatus

The children's parents completed a waiver developed by the authors. The waiver was an acknowledgment that the gymnastics

program was being offered as a recreational activity for their children rather than a therapy session (see Appendix 1). The authors developed two additional surveys. The first was a Parent Survey developed to view change over time. It addressed the parent's perceptions on their child's pre-class attitude, post-class reaction, ability to follow directions, and motor control. It also addressed the parent's personal feelings toward the offering of this activity and their feeling about the availability of other programs like it (see Appendix 2). It was administered both at the outset and after seven weeks of the program. The final survey developed was an open-ended parent survey aimed at assessing parental satisfaction with the program (see Appendix 3).

Procedure

A detailed description of the program can be found in Appendix 4. Initially, the aforementioned waiver was given to and signed by the parents. At the beginning of the gymnastics classes (Time 1), the first Parent Survey was completed by the parents. The answers were to be based on their perceptions after the first class. During the child's seventh class, the second Parent Survey was given (Time 2). The survey was to be in response to the previous six classes, which occurred over a six-week time period. The final personal satisfaction survey was given after the remaining four weeks of the program.

Results

On both of the administrations of the structured measures of parental satisfaction (at the 7th week and 11th week), parents reported high desire for more activities for their children, as well as high levels of personal satisfaction with the program. The open-ended personal satisfaction survey also showed strong support for the continuation of the program.

Within-subjects t-tests showed no significant changes from Time 1 to Time 2 on either the measure of gross motor skills or listening ability. However, the distribution of the motor control scores shifted during training in a favorable direction. At the beginning of the program, 75% of children were rated as attempting skills with help and only 8.3% were either executing skills or attempting tasks without help. At Time 2, after several class sessions, 33.3% of the children were attempting tasks without help.

On the 4-point scale assessing listening behavior (1 denoting "always follows directions" and 4 denoting "never follows directions"), ability to follow directions was stable throughout the training experience (Time 1 mean score = 2.125, Time 2 mean score = 2.111). The fact that the children listened consistently throughout the experience is encouraging, given that there was some indication that the participants' enthusiasm waned somewhat over the course of the program. A smaller percentage of children were extremely enthusiastic as time progressed (Time 1 = 75%, Time 2 = 44.4%).

Discussion

The indices of consumer satisfaction included in this outcome evaluation provide strong support for the effectiveness of the gymnastics program. The majority of participating youngsters attended all sessions of the program, remained throughout each session, cooperated with their parents in coming to the program, and listened to directions during the program sessions. Parents' evaluations of the program were extremely positive; they supported its continuation and saw it as a valuable opportunity for their children.

The measures of gross motor and listening skills did not reveal significant changes during the course of the program. Since this gymnastics experience was relatively brief, there may not have been sufficient time for these skills to improve measurably. However, it is important to note that a significantly higher percentage of students could perform motor skills independently at the end of the program than at the beginning of the program (33% versus 8%). As noted in the waiver signed by parents before the program began, this program was not intended to be a form of therapy for the children. Its principal aim was to provide a rarely available recreational program for this special needs population, in order to offer extra opportunities for normal childhood socializing. The parents' reactions attest to the program's success in this regard.

Although the children's ability to follow directions did not

improve, some of this was due to a ceiling effect. From the outset, the majority of students were productively engaged in the experience and were attending well to directions. For the most part, the child's ability to follow directions was appropriate for the class. Self-selection may well have contributed to this; parents would not be likely to enroll highly noncompliant children in a program conducted by undergraduate volunteers.

Although the t-test comparison did not reveal significant change in gross motor skills for the entire group, several parents' observations of their children's gross motor activity outside of the class noted improvement. In the comments section of the Time 2 parent survey, many parents noted their child's utilization of the gross motor skills worked on in the class, such as jumping and climbing on objects, during their play at home. Looking at percentages for motor control, it is apparent that although some children seemed to become more adventurous during the course of the training, others became more hesitant or more stubborn. Research exploring the predictors of these individualized responses to this type of program may help to refine the experience in the future, in order to make it more optimal for all children.

This program supported the notion that these children are capable of more than many believe. On the open-ended personal satisfaction surveys, several parents reported that they previously were not aware of some of their child's abilities. This suggests that this class may have helped to reverse a self-

fulfilling prophecy - that developmentally disabled children are not capable of doing what their non-disabled peers can do.

The decrease in enthusiasm expressed prior to class may be due to the class' becoming a part of the child's regular routine. Although excitement reduced over time, the children continued to be cooperative in coming to classes.

Parents' desire to see more programs offered for their special needs children further validates the need for such recreational programs. Parent satisfaction with the program shows that the class was viewed as beneficial. The participating children were provided with opportunities to learn and play tailored to their special needs and involving other children similar to them.

The results of this study need to be viewed cautiously, because they are based solely on parents' perception of their children. Because parent perceptions may not be reliable, future research on such programs should include use of in-class raters' who can provide concurrent observational data. To assess social and motor changes more accurately, a longer experimental period of participation and a longitudinal assessment would be helpful.

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Appendix 1

This gymnastics class is being offered as purely recreational. Our aim is to supply an extra-curricular, social activity for children with autism, Aspergers syndrome or PDD-NOS, rather than a therapy. We cannot guarantee that your child will improve in any specific area of functioning. We can, however, guarantee that we will try our best to supply these special children with a unique, least restrictive and fun atmosphere. We hope that your child will improve in both motor and social areas of functioning in every day life, but cannot guarantee anything. This program is experimental and we do not know of any others in the area, which is why we cannot assure you of a specific outcome.

I, _____, understand that the PDD class at Tiny Tumblers is experimental and is not being presented as a therapy session. I understand that the aim of this class is to offer children with autism, Aspergers syndrome and PDD NOS an extracurricular, social activity that is unique, fun and presented in a least restrictive environment. If my child does not show improvement, I will not hold Tiny Tumblers and its employees liable.

Parent/Guardian Name

Date

Parent/Guardian Name

Date

Appendix 2

Parent Survey

Child's Name: _____

Child's Age: _____

Diagnosis: Autism Asperger's syndrome PDD-NOS

Please answer the following questions by placing the number of your answer on the line provided. Base your responses **solely** on how your child reacts to and behaves in this specific class.

- ____ 1. Your perception of your child's attitude towards attending this class.
1. extremely enthusiastic and eager
 2. somewhat enthusiastic and eager
 3. resistant (says "No," grimaces when at gym or leaving home, etc)
 4. actively resistant (cries, firmly says or yells "No," physically resists, etc.)
- ____ 2. Your child's immediate reaction after the class.
1. extremely positive
 2. somewhat positive
 3. somewhat negative
 4. extremely negative
- ____ 3. How did you personally feel about giving your child this opportunity?
1. ecstatic
 2. somewhat happy
 3. indifferent
 4. hesitant and wary
- ____ 4. How would you feel about more activities being available for your child?
- | | | | |
|--|---|---|--|
| 1 | 2 | 3 | 4 |
| activities such as
this class provide a
valuable experience
for my child and me | | | our schedule is too
hectic to take my
child to any new
programs |
- ____ 5. Your child's ability to follow the instructor's directions (i.e. take turns, cooperate, do as instructed, etc.).
1. always follows directions
 2. sometimes follows directions
 3. seldom follows directions
 4. never follows directions
- ____ 6. Describe your child's general motor control while in the class:
1. gracefully executes skills
 2. attempts skills without help
 3. attempts skills with help
 4. hesitant/occasionally attempts skills with help
 5. rarely attempts skills
 6. never attempts skills

Please provide any additional comments you have, especially if you have noticed any behavior changes outside of this class since your child began:

Thank you very much for your help and support. You are not only helping your child, but by allowing this opportunity to happen other families both in and outside this area may benefit from this program.



Cindy Leahy
Monica Rarig

Appendix 3

As you know, this is an experimental class. With your help, we will be able to discover both the positive and negative aspects of this program. Please respond honestly to the following; we embrace constructive criticism.

If this class were to be terminated:

How would you feel?

How do you perceive your child would feel?

Have you noticed any motor, social and/or behavioral changes in your child since the start of this class? Yes No

Please explain.

If you would like to comment further, please do so in the space below.

Appendix 4

Program Description

Goal: to offer an atypical population of children (namely those with autism and related disorders) a typical childhood activity in a least restrictive environment with instructors who are aware of their special needs

Population: children who have been diagnosed with autism and related disorders i.e. PDD-NOS, Asperger's syndrome, sensory disorders, language disorders, social difficulties, etc.

Staff: *original (during study)* – volunteers from Ursinus College who have been in contact with special needs children prior to this experience, one high school volunteer, and the woman who runs the facility who graduated from Ursinus College in 1999 with a B.S in Psychology and a minor in Coaching
Current – an employee of the facility, the woman who runs the gym, the same high school student, and a senior from Ursinus College with a major in Psychology and a minor in Exercise and Sports Science (involved with the program since the beginning)

Current Location: Tiny Tumblers Gym in Collegeville, PA

Current Enrollment: 11 children between the ages of 4 and 9

Staff to Student Ratio: approximately 1:1

Duration of Class: 45 minute sessions that run for four-week blocks

Current Cost for Participants: \$10/class plus one time/year \$15 insurance fee

Class Structure:

1. 5 minute warm-up
 - consists of jumps and stretches that vary each time
 - led by one of the instructors, but opportunities for students to lead are available so as to provide a chance to improve self-esteem and leadership abilities
 - helps develop listening and imitation skills
2. 30 minutes on the various apparatus
 - apparatus available – trampoline, floor exercise, uneven parallel bars, balance beams, trapezoid-shaped mats for vaulting horse, obstacle courses
 - students assigned to groups
 - one-on-one student and instructor – this format basically is used for students who have major social deficits and do not yet comprehend how to interact in a group
 - a group of two or three children with either one, two or three instructors
 - this segment of the session is student led with instructors providing guidance
 - students get to choose what events to do but instructors detail what skills to perform -- incorporating free choice allows the children the chance to realize that they can have an affect on their environment, many individuals with autism do not take advantage of this possibility
 - the students must listen to and follow the directions of their instructor(s) even though they have a choice of events
 - helps with balance, vestibular, social, sensory and strength problems

3. 10 minute group activity

- usually a parachute activity, but does vary
- parachute activity has helped with visual desensitization – parachute is blue, red, yellow, and green and can be overstimulating for children with sensory difficulties
- if introduced in small amounts and if the child is not forced to participate, he/she can grow to tolerate the stimulation and hopefully generalize that toleration into everyday life
- this segment is an integral part of the program because it allows the children to interact in a social setting with peers
 - helps students who are not aware of their surroundings become more aware i.e. the children in the one-on-one groups
 - helps the more advanced students practice their social skills in an environment sensitive to their uniqueness
 - provides a time for the more advanced children to model proper behavior for the less advanced children to mimic

Problems and Solutions:

- Tiny Tumblers Gym is designed especially for young children. "Playful Dare Devils," while held there, is not able to accommodate older or heavier children because of the small equipment and lack of space in the facility. Therefore, this program propounds a bias based on age and size. As a solution, the program needs to be offered at YMCA's, private gymnastics clubs designed for all ages, colleges, etc.
- While held in Collegeville, the program is not accessible to a large portion of the autistic community. The goal of the program is to offer a typical childhood activity to

an atypical population, but eleven children is not even one percent of the target population. To satisfy fully the program's goal, it needs be offered in facilities throughout the community, state, country, even the world.

- An undergraduate student with a double major in Exercise and Sports Science and Psychology developed this program. As an extra-curricular social activity, the class is wonderful. However, to guarantee an increase in social and motor skills through the class, a panel of therapists and psychologists should be assembled. At the moment, the children are showing evidence that the program is increasing their social and motor skills. Maximizing these skills, however, is not possible without the input of professionals.
- **Funding is necessary**, at least in these beginning stages, for the above to occur. Further developing the "Playful Dare Devils" program will take time, dedication and perseverance; those involved deserve something in return.
- The current program employs instructors who are aware of autism and its spectrum disorders, but who neither are experts nor trained in handling individuals with these disorders. A way to combat this is to offer training sessions and a certification for instructors or to have on staff at least one person knowledgeable in these disorders.
- A majority of the children in the program are in classes consisting only of others with a disorder similar to theirs. To increase appropriate social and motor skill development, some of these children should be placed in classes with normally developing peers. This opportunity will allow the children with an autism spectrum disorder to be exposed to proper behavior. Hopefully, they will begin to mimic these

behaviors in the class and then generalize them into life outside of "Playful Dare Devils."